



Product Specification

Supplier Authorized Signature/				
Status: ☐ Draft ☒ Released/	Product name	NB-IoT Lighting Controller		
	Model	MS15149		
	Project	A7276-01		
	Version	A0		
	Prepared		Date	
	Marketing		Date	
	Quality		Date	
	Approved		Date	

Customer Authorized Signature/			
Quality		Approved	

1 DESCRIPTIONS

The MSLXXXX series NB-IoT lighting controllers are designed for roadway and area lighting. It can transmit data via the Narrow Band Internet of Things (NB-IoT) network. It can turn on / off , dimming and monitor lights; and can locate own position by GPS; and can detect ambient light.



1.1 FEATURES

- Wide input voltage design, can work at 100 ~ 277VAC voltage.
- Surge: 10KV, 5KA.
- Operating temperature: -40 to 70℃.
- Power consumption <2W.
- Network: NB-IoT, BAND1/3/5/8/20/28.
- NB-IoT radio protocol (3GPP Rel-13 & Rel-14).
- Built-in SIM.
- It can switch up to 5A LED drivers .(220Vac)
- 2 Channels 0~10V dimming interface.
- Monitor the lamps' voltage, current, power, power factor and self-temperature.
- Energy consumption statistics and working time statistics.
- Communication fault protection mechanisms, run according to the time and illuminance.
- Failure mode: Fail-on.
- GPS: Accuracy $\pm 6m$ (clear open sky).
- Photocell: Complies with ANSI C136.10.
- Schedule & Photocell combination dimming.
- RF Complies with NCC.
- Complies with UL773.
- Complies with ANSI C136.41-2013.
- Warranty: 5 years standard.

2 CHARACTERISTICS

2.1 ABSOLUTE MAXIMUM RATINGS

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Min input voltage		90	/	/	VAC
Max input voltage		/	/	305	VAC
Max output current	Peak@100mS	/	/	100	A
Max dimming current	RMS	/	/	10	mA

2.2 ELECTRICAL CHARACTERISTICS

At 220VAC input, 20 °C, 50% RH, 100Kpa conditions./

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
AC input voltage		100	/	277	VAC
AC input current	220VAC	0.02	/	5.05	A
AC output current	220VAC,RMS	0	/	5	A
Power Dissipation		0.4	/	2	W
Dimming voltage		0	/	11	V
Dimming current	10Voutput	0	1	5	mA
Dimming accuracy		-1	/	+1	%
Metering voltage range		0	/	300	VAC

Metering current range		0	/	5	A
Metering voltage accuracy		-2	/	+2	%
Metering current accuracy		-2	/	+2	%
Operating Frequencies BAND1	Receive	2110	/	2170	MHz
	Transmit	1920	/	1980	MHz
Operating Frequencies BAND3	Receive	1805	/	1880	MHz
	Transmit	1710	/	1785	MHz
Operating Frequencies BAND5	Receive	925	/	960	MHz
	Transmit	880	/	915	MHz
Operating Frequencies BAND8	Receive	934	/	944	MHz
	Transmit	890	/	900	MHz
Operating Frequencies BAND20	Receive	791	/	821	MHz
	Transmit	832	/	862	MHz
Operating Frequencies BAND28	Receive	758	/	803	MHz
	Transmit	703	/	748	MHz
RF receiver sensitivity		-113	/	/	dBm
RF transmitter power		20	/	23	dBm
Spectral range of sensitivity	Photocell	350	/	970	nm
GPS Sensitivity	Tracking	/	-160	/	dBm

2.3 OPERATING CONDITIONS

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operating temperature		-40	/	70	℃
Storage temperature	Indoor dry, well-ventilated place	-40	/	85	℃
Relative humidity	No frost 无霜冻	10	/	95	%
Vibration		/	/	10	G
Warranty			5		Years
Ingress protection	Not Installed	/	IP53	/	
Packaging Impact	Drop	/	1	/	m
Flammability		UL94-V0			

2.4 SAFETY

TYPE	Test level	
Isolation Voltage	AC to Dimming	3kVac,10mA,1min

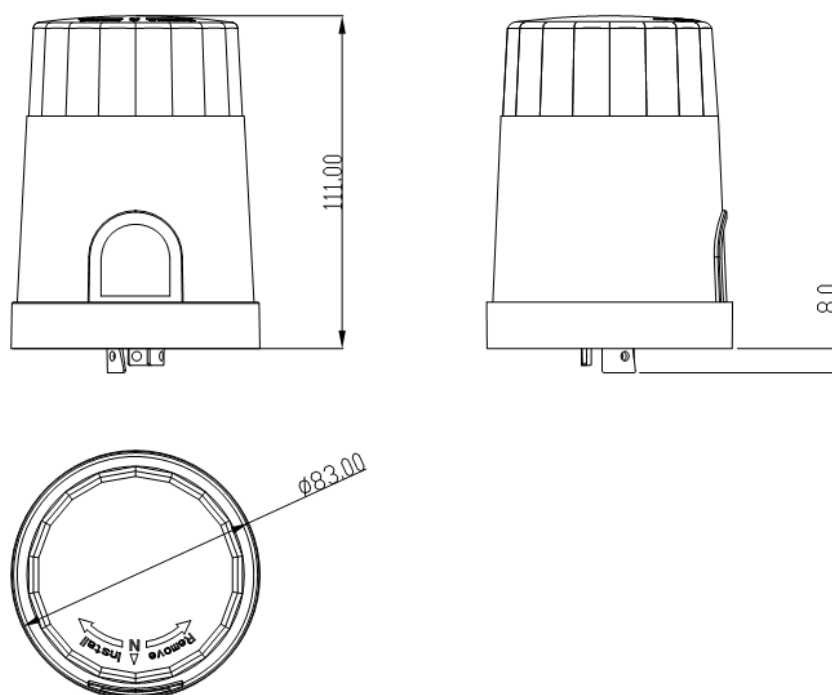
2.5 EMC

TYPE/	Standard/	Test level
Electrostatic discharge immunity	IEC61000-4-2	Level 4
RFEMS	IEC61000-4-3	Level 2
Electrical fast transient burst immunity	IEC61000-4-4	Level 4
Surge Immunity	IEC61000-4-5	Level X 10KV,5KA
Conducted disturbances induced by RF field immunity	IEC61000-4-6	Level 2
Power frequency magnetic field immunity	IEC61000-4-8	Level 3
Electromagnetic disturbance characteristics	EN55015 Class B	
Electromagnetic compatibility and Radio spectrum Matters (ERM)	NCC	

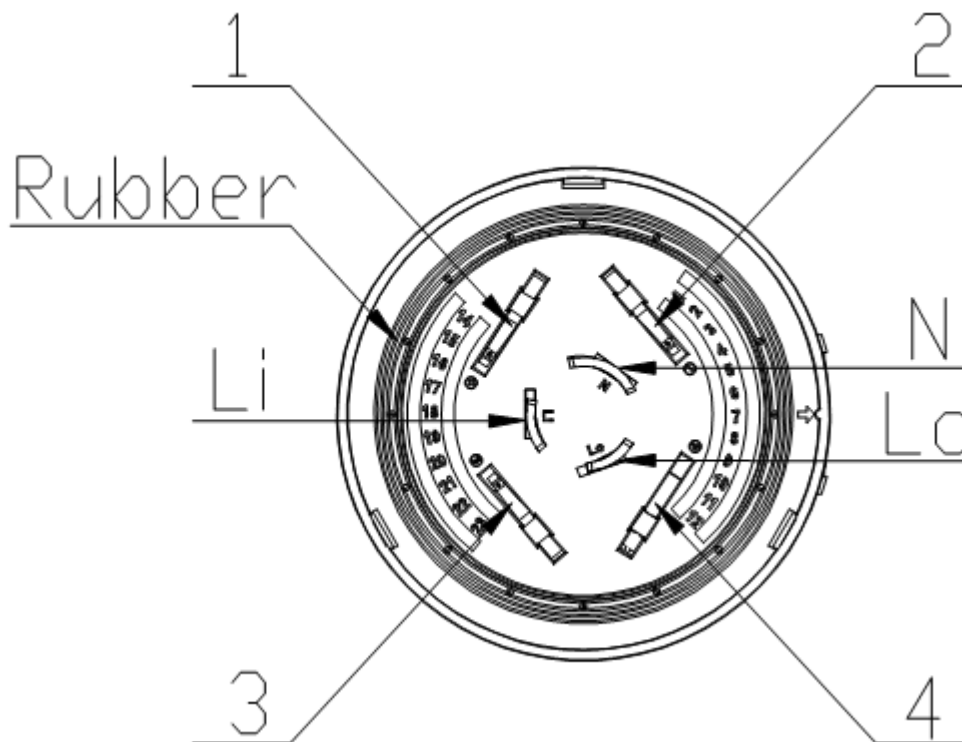
3 MECHANICAL DATA

NET WEIGHT: 230g(with box)

3.1 DIMENSIONS



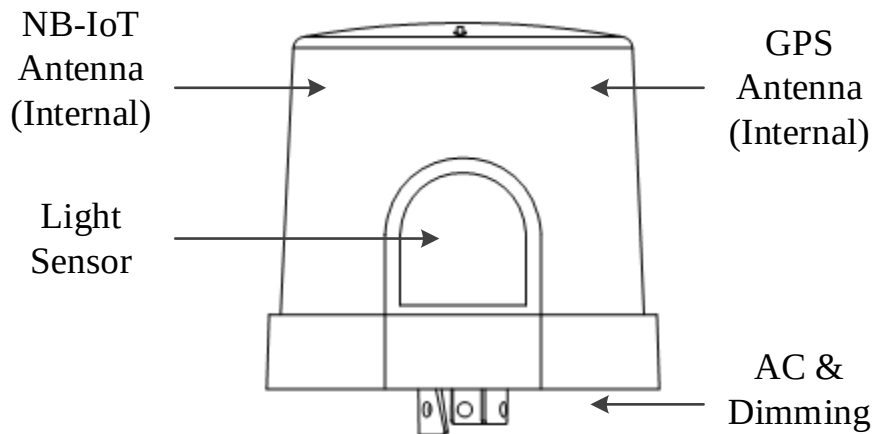
3.2 INTERFACES



BOTTOM VIEW

- PIN Li: Live line input
- PIN Lo: Live line output
- PIN N: Neutral line input
- PIN 1: Dim+
- PIN 2: Dim-
- PIN 3: CH2 Dim+
- PIN 4: CH2 Dim-
- The Rubber Ring makes installation ingress protection can reach IP65;
- Complies with ANSI C136.41-2013.

4 FUNCTION DESCRIPTIONS



FRONT VIEW/正视图

4.1 AC SWITCH

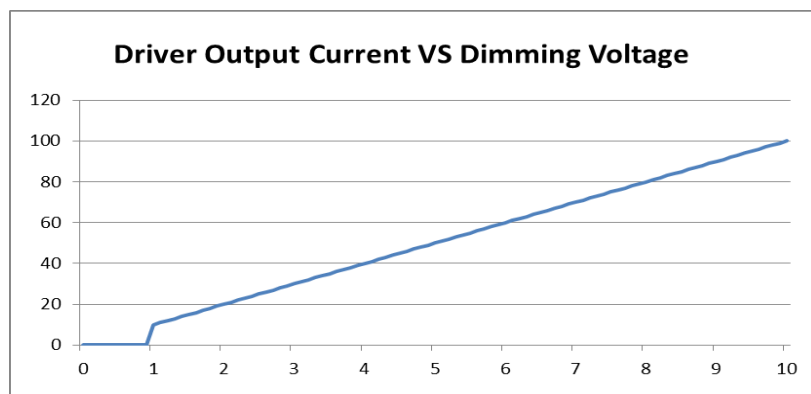
This product built-in high inrush power relay, can withstand 5A LED inrush power (220V) when the driver switch.

This product is subjected to a simulated load 5A LED driver switch test 3650 times, can guarantee the customer 10 years of use.

4.2 DIMMING

There are 2 channels of 0-10V ANALOG DIMMING interface.

In order to better adapt to a variety LED Drivers, the DEFAULT DIMMING CURVE as shown below.



DEFAULT DIMMING CURVE

4.3 NB-IoT

This product is compliant with the NB-IoT radio protocol 3GPP Rel-13 & Rel-14. Communicate with the Cell (*BAND1/3/5/8/20/28*).

Through this product can send the operating parameters of the lamp back to the cloud, and receive the cloud of synchronous data and instructions.

The NB-IoT antenna is a monopole antenna. Data transfer rate: 100~100kbps.

4.4 GPS

Automatically obtain its own location and UTC time after boot. The time is the basis of the scheduled time dimming.

The location information will be uploaded to the cloud, and allow the customers to view the location of the street lamp on the GUI. Positioning accuracy error <6m, on the GUI customers can determine the location of each street lamp.

4.5 LIGHT SENSOR

The light sensor is a Silicon NPN Phototransistor. It's spectral range of sensitivity: (typical) 350~970nm (adapted to human eye sensitivity).

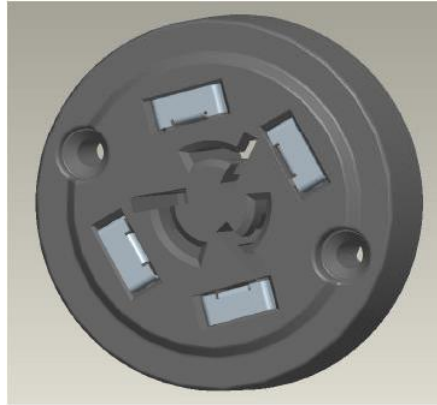
Product predetermined rules of the light switch based on the ambient illuminance value.

In the time allowed to switch lamps through the ambient illuminance value. If the ambient illuminance is less than 15 ± 6 lux, turn on the lights; then if the ambient light is higher than 50 ± 6 lux, turn off the lights.

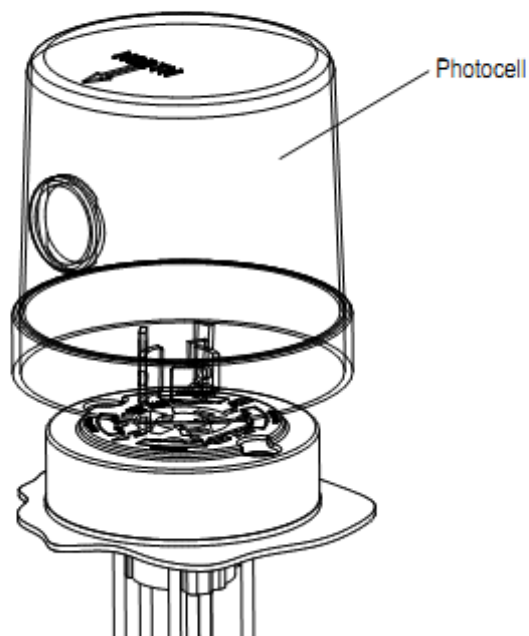
5 APPLICATIONS

5.1 RECEPTACLE

Use with TWIST-LOCK PHOTOCONTROL RECEPTACLE. (Conforms ANSI C136.41)

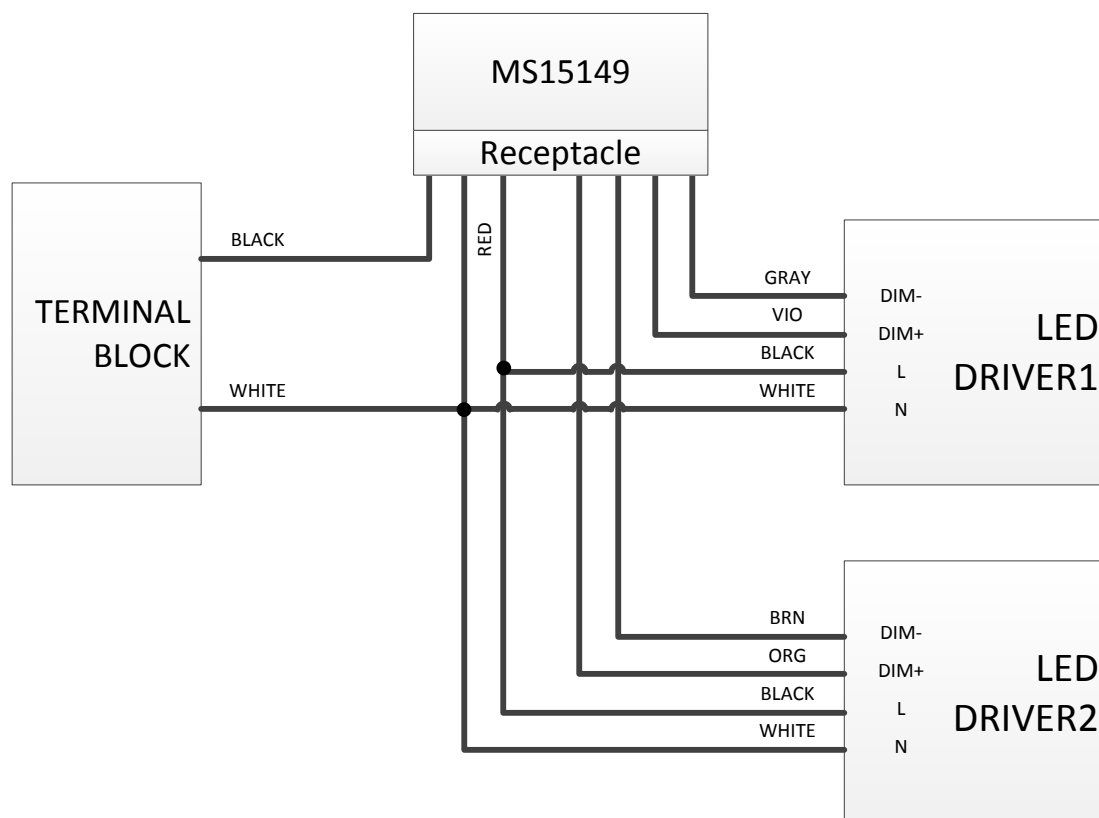


EXAMPLE RECEPTACLE ILLUSTRATIONS

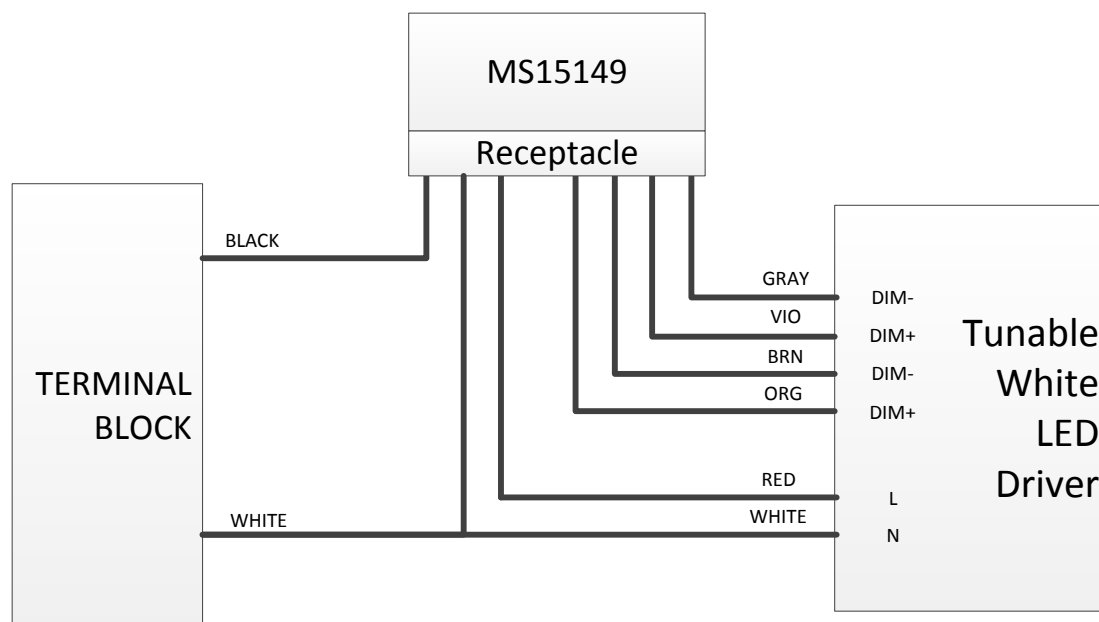


Install on the receptacles

5.2 TYPICAL APPLICATIONS



For two LED drivers application



For tunable white LED drivers application